



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/978,118	10/15/2001	Monisha Ghosh	US 010142	3761

24737 7590 07/25/2006

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

WILSON, ROBERT W

ART UNIT PAPER NUMBER

2616

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

87

Office Action Summary	Application No. 09/978,118	Applicant(s) GHOSH, MONISHA	
	Examiner Robert W. Wilson	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1,6,7,12,13,15,20,21 and 24 is/are rejected.
 7) ☒ Claim(s) 2-5,8-11,14,16-19,22 and 23 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 15 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/5/02 & 10/15/01</u> | 6) <input type="checkbox"/> Other: _____ |

Claim Objections

1. Claims 2-5, 8-11, 14, 16-19, & 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Drawings

2. The drawings are objected to because they have handwritten element numbers therefore the drawings are not of sufficient quality to appear in a published patent. The examiner recommends that the drawings be formalized so they are sufficient quality to be published as a patent. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,6-7, 12-13, 15, 20-21, & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komulainen (U.S. Patent No.: 6,658,047) in view of Pilot-aided Adaptive MMSE Receivers for DS/CDMA which is an IDS document of record by Caire et al. henceforth referred to as Caire

Referring to claim 1, Komulainen teaches: a method for receiving DS-CDMA per col. 1 line 53 from a base station per col. 4 line 30 which transmits K symbols or multiple symbols to multiple user per col. 4 lines 27-35 over a CDMA channel per col. 4 line 13 which inherently has a channel response. The reference teaches that dedicated pilot symbols are created per col. 3 lines 66-col. 4 line 25 and signal are transmitted per col. 4 lines 29-34 in the CDMA channel per col. 4 line 13. The examiner has interpreted that the dedicated pilot and signals are sent together over the same CDMA channel because the pilot is not being sent separately on a pilot channel. Each user has a receiver that has an adaptive chip estimator or adaptive chip equalizer capable of tracking channel response per Figure 1. The coefficients or equalizer taps are adapted using the received signal which consists of dedicated pilot signal at the receiver and they are adapted in order to minimize the least mean square error in order minimize received symbol errors per col. 5 line 32-col. 6 line 67. 140, 160, & 170 per Figure 1 perform despreading said signal using a

Art Unit: 2616

chipping sequence associated with that mobile user to extract the information symbols for that users CDMA channel.

Kommulainen does not expressly call for: pilot sequences or single channel

Caire teaches: continuously sending pilot signals or pilot sequences within a co-channel shared by user signals or single channel per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the pilot sequences over a single channel of Caire in place of the dedicate pilot of Kommulainen because receiver's performance relative to detection of symbols is greatly improved.

Referring to claim 6, the combination of Kommulainen and Caire teach: the method for communicating information symbols as claimed in claim 1 and equalizer.

The combination does not expressly call for: continuously transmission of the pilot signal in order to perform continuous equalization.

Caire teaches: continuously transmission of the pilot signal in order to perform continuous equalization per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add continuously transmitting of the pilot signal in order to perform continuous equalization of Caire to the receiver of the combination of Kommulainen and Caire because receiver's performance relative to detection of symbols is greatly improved by continuously performing equalization.

Referring to claim 7, Figure 1 discloses a receiver which receives signals from a base station per col. 4 line 30 in DS-CDMA per col. 1 line 53. The base station transmits K symbols or multiple

Art Unit: 2616

symbols to multiple users per col. 4 line 29-coll 5 line 30 over a CDMA channel per col. 4 line 13 which inherently has a channel response. The system has a mechanism for generating dedicated pilot per col. 3 line 66-col. 4 line 25 in a CDMA channel per col. 4 line 13 for multiple mobile users. And an adaptive chip estimator or adaptive chip equalizer provided at each user receiver device and is capable of tracking the channel response per Figure 1.

The system has a mechanism for adapting the coefficients or equalizer taps using the received signal which consists of dedicated pilot signal at the receiver are adapted in order to minimize the least mean square error in order minimize received symbol errors per col. 5 line 32-col. 6 line 67. 140, 160, & 170 per Figure 1 in the receiver perform despreading said signal using a chipping sequence associated with that mobile user to extract the information symbols for that users CDMA channel.

Kommulainen does not expressly call for: pilot sequences or single channel

Caire teaches: continuously sending pilot signals or pilot sequences within a co-channel shared by user signals or single channel per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the pilot sequences over a single channel of Caire in place of the dedicate pilot of Kommulainen because receiver's performance relative to detection of symbols is greatly improved.

Referring to claim 12, the combination of Kommulainen and Caire teach: the DS-CDMA system as claimed in claim 7 and an equalizer continuously receiving the pilot sequences

The combination does not expressly call for: performing continuous equalization.

Art Unit: 2616

Caire teaches: continuously performing equalization per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add continuous performing equalization of Caire to the receiver of the combination of Kommulainen and Caire because receiver's performance relative to detection of symbols is greatly improved by continuously performing equalization.

Referring to claim 13, Figure 1 discloses a receiver that performs the method for an adaptive chip estimator or adaptive chip equalizer used for receiving symbols. "Rapidly fading channels" appears only in the preamble and not the claim limitations therefore it was treated as an intended use and given no weight.

A dedicated pilot symbols are generated per col. 4 lines 1-2.

K symbols or multiple symbols are transmitted to multiple users comprising inherent data sequences destined for multiple mobile per col. 4 line 29-col 5 line 30 over a CDMA channel per col. 4 line 13. The reference teaches that dedicated pilot symbols are created per col. 3 lines 66-col. 4 line 25 and signal are transmitted per col. 4 lines 29-34 in the CDMA channel per col. 4 line 13. The examiner has interpreted that the dedicated pilot and signals are sent simultaneously together over the same CDMA channel because the pilot is not being sent separately on a pilot channel. Each user has a receiver that has an adaptive chip estimator or adaptive chip equalizer capable of tracking channel response per Figure 1. 140, 160, & 170 per Figure 1 obtain an equalizer output capable of being de-spread to obtain a data sequence for a particular user.

Art Unit: 2616

The coefficients or equalizer taps are adapted using the received signal which consists of dedicated pilot signal at the receiver and they are adapted in order to minimize the least mean square error in order minimize received symbol errors per col. 5 line 32-col. 6 line 67.

140, 160, & 170 per Figure 1 perform despreading said signal using a chipping sequence associated with that mobile user to extract the information symbols for that users CDMA channel.

Kommulainen does not expressly call for: generating a plurality of pilot sequences having a known chip sequence or single channel per col. 4 line 1

Caire teaches: continuously sending pilot signals or plurality of pilot sequences which have a known chip sequence within a co-channel shared by user signals or single channel per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the plurality of pilot sequences over a single channel of Caire in place of the dedicate pilot of Kommulainen because receiver's performance relative to detection of symbols is greatly improved.

Referring to claim 15, Kommulainen teaches: method transmitting a communicating signal including multiple information symbols destined for multiple users per col. 4 line 26-col. 5 line 30 simultaneously over a CDMA channel per col. 4 line 1 having an inherent channel response. A mechanism for generating dedicated pilot symbols. The examiner has interpreted that the dedicated pilot and signals are sent simultaneously by the transmitter together over the same

Art Unit: 2616

CDMA channel because the pilot is not being sent separately on a pilot channel per col. 4 line 1-col. 5 line 64.

Each user has a receiver that has an adaptive chip estimator or adaptive chip equalizer capable of tracking channel response per Figure 1. 140, 160, & 170 per Figure 1 obtain an equalizer output capable of being de-spread to obtain a data sequence for a particular user.

The coefficients or equalizer taps are adapted using the received signal which consists of dedicated pilot signal at the receiver and they are adapted in order to minimize the least mean square error in order minimize received symbol errors per col. 5 line 32-col. 6 line 67.

140, 160, & 170 per Figure 1 perform despreading said signal using a chipping sequence associated with that mobile user to extract the information symbols for that users CDMA channel.

Kommulainen does not expressly call for: pilot having a chip sequence or a single channel Caire teaches: continuously sending pilot signals or pilot having a chipping sequences within a co-channel shared by user signals or single channel per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the pilot signal having chipping sequences over a single channel of Caire in place of the dedicate pilot of Kommulainen because receiver's performance relative to detection of symbols is greatly improved.

Referring to claim 20, the combination of Kommulainen and Caire teach: the apparatus as claimed in claim 15 and an equalizer.

The combination does not expressly call for: continuously transmission of the pilot signal in order to perform continuous equalization.

Caire teaches: continuously transmission of the pilot signal in order to perform continuous equalization per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add continuous transmission of the pilot signal in order to perform continuous equalization of Caire to the apparatus of the combination of Kommulainen and Caire because receiver's performance relative to detection of symbols is greatly improved by continuously performing equalization

Referring to claim 21, Kommulainen teaches: receiver (10 per Figure 1).

130 per Figure 1 or adaptive chip equalizer for receiving a dedicated pilot symbols per col. 4 line 2 and signal per col. 4 lines 27-col. 5 line 30. The examiner has interpreted that the dedicated pilot and signals are sent simultaneously together over the same CDMA channel because the pilot is not being sent separately on a pilot channel.

140 per Figure 1 or device for despreading the output of 130 per Figure 1 or equalizer in order to obtain output of 170 per Figure 1 or data sequences for a particular user. One or more equalizer coefficients per col. 5 line 65-col. 6 line 34 or taps are adapted upon receiving a dedicated pilot per col. 4 line 2.

Art Unit: 2616

140, 160, & 170 per Figure 1 despread the communications signal using the symbol sequence or chipping sequence associated with that user to extract the information symbols for that user from the CDMA channel

Kommulainen does not expressly call for: pilot signal in a single channel

Caire teaches: continuously sending pilot signals within a co-channel shared by user signals or single channel per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the pilot signal which have chipping sequences over a single channel of Caire in place of the dedicate pilot of Kommulainen because receiver's performance relative to detection of symbols is greatly improved.

Referring to claim 24, the combination of Kommulainen and Caire teach: the receiver according to claim 21 and equalizer.

The combination does not expressly call for: continuously transmission of the pilot signal in order to perform continuous equalization.

Caire teaches: continuously transmission of the pilot signal in order to perform continuous equalization per Para I Page 57 and per Para IIA per Pages 58-59.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add continuously transmission of the pilot signal in order to perform continuous equalization of Caire to the receiver of the combination of Kommulainen and Caire because receiver's performance relative to detection of symbols is greater improved by continuously performing equalization

Response to Amendment

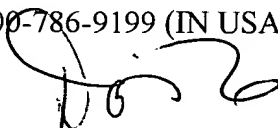
4. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

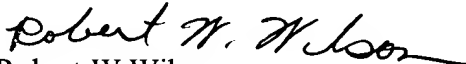
Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Wilson whose telephone number is 571/272-3075. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571/272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


DORIS H. TO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600


Robert W Wilson
Examiner
Art Unit 2616

RWW
7/13/06